

### Patent Claims

1. Method for producing a vehicle part with integrated antenna elements and a plastic substrate produced by a moulding process, characterized in that the vehicle part being provided with a coating layer and at least one antenna element being arranged between the coating layer and the plastic substrate.
2. Method according to Claim 1, characterized in that the coating layer is applied by a film coating method.
3. Method according to Claim 1 or 2, characterized in that at least one antenna element is introduced into the vehicle part during the moulding process.
4. Method according to one of the preceding claims, characterized in that at least one antenna element is applied to the coating film or to the plastic substrate by structured direct metallization or a screen-printing process.
5. Method according to one of the preceding claims, characterized in that at least one punched part of metal adhesive film or an arrangement of lines applied to a substrate is applied to the coating film or to the plastic substrate as the antenna element.
6. Method according to one of the preceding Claims 2-5, characterized in that the coating film is preformed by a thermoforming process.
7. Method according to one of the preceding Claims 3-6, characterized in that the mould used for the moulding process is used as a reference for positioning at least one antenna element.
8. Method according to one of the preceding claims, characterized in that drilling of a hole for receiving an electrical connection is performed in the plastic substrate after the moulding process.

9. Method according to one of the preceding Claims 1-7, characterized in that an opening through which the antenna element is contacted is created by a suitable design of the mould.
10. Method according to one of the preceding Claims 3-7, characterized in that the antenna element is contacted through a conductive insert part introduced during the moulding process.
11. Vehicle part with a plastic substrate and a coating layer bonded to it, characterized in that at least one antenna element is arranged between the plastic substrate and the coating layer.
12. Vehicle part according to Claim 11, characterized in that the coating layer is a coating film.
13. Vehicle part according to Claim 11 or 12, characterized in that means for the direct contacting of the antenna elements are present.
14. Vehicle part according to either of Claims 11 and 12, characterized in that means for the electromagnetic coupling of the antenna element, in particular by means of an aperture coupling, are provided.
15. Vehicle part according to one of Claims 11 to 14, characterized in that a module which is coupled to at least one antenna element and contains further active or passive electronic components, in particular filters and antenna amplifiers, is provided.
16. Vehicle part according to Claim 15, characterized in that it additionally has positioning elements by means of which the module is arranged on the vehicle part in a positionally accurate manner with respect to the antenna element.
17. Vehicle part according to one or more of Claims 11-16, characterized in that the vehicle part has a ground plane.

18. Vehicle part according to Claim 17, characterized in that the ground plane takes the form of a metal adhesive film, direct metallization or screen print.

19. Vehicle with a plastic part according to Claims 11-18.